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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPLICANT(s): Mika Rinne et al.

SERIAL NO.: 09/498,891 ART UNIT: 2665

FILING DATE: 2/7/00 EXAMINER: Molinari, Michael J.

TITLE: METHOD FOR INFORMING LAYERS OF A PROTOCOL STACK ABOUT THE PROTOCOL IN USE

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APPELLANTS' BRIEF

(37 C.F.R. §1.192)

This is an appeal from the final rejection of the claims in the above-identified application. A Notice of Appeal was mailed on October 21, 2003. The fees required under 37 C.F.R. §1.17 are being submitted herewith. This brief is being submitted in triplicate. An appendix of claims is attached hereto.

I. REAL PARTY IN INTEREST

The real party in interest in this Appeal is:

Nokia Mobile Phones Limited
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FINLAND

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II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

III. STATUS OF CLAIMS

Claims 1-24 are pending in the application.

Claims 1-12 and 14-24 have been finally rejected.

Claim 13 is objected to.

The claims on appeal are 1-24.

IV. STATUS OF AMENDMENTS

Appellants are filing an amendment concurrently with this Appeal Brief, where claim 13 is rewritten in independent form and incorporates all the limitations of claims 1 and 12. This amendment has not been previously submitted.

Appellants believe that the amendment is entitled to entry under the standards set forth in MPEP 1207 because the amendment adopts the Examiner suggestions and removes issues from appeal and, as such, requires only a cursory review by the examiner.

The amendment also includes replacing the word "delivering" with the word --signaling-- in the dependent claims so as to be consistent with the wording of the independent claims. Appellants believe that the amendment is entitled to entry under the standards set forth in MPEP 1207 because the amendment requires only a cursory review by the examiner.

V. SUMMARY OF INVENTION

A mobile terminal may connect to radio access networks which use different protocols. The present invention provides for signaling about different protocols enabling a terminal to automatically adapt itself to new operating environments.

One particular feature of protocol layers in a protocol stack is that information handled on one protocol layer is generally not available to other layers, because between the layers, operations like bit interleaving and packet segmentation may take place. The present invention provides a capability where information about a certain protocol layer is available and may be signaled to another protocol layer.

Figure 3 of the present application shows protocol frames 301-306 associated with a certain packet switched data connection. Page 10, lines 2-6 of the present application describes an embodiment of the invention where each protocol frame contains a protocol identifier 307. Page 10, lines 7-26 describe protocol frames 308-313 of Figure 3 as showing an embodiment where information about the protocols being used is communicated at the beginning of a connection. The packets 308-313 associated with the data transfer are in chronological order from right to left. In this case the information about the protocols used is in identifier 314 in the first protocol frame 308 of the packet switched data connection.

Figure 4 of the present application shows a detailed diagram of a second protocol layer of a radio access network in the packet switched data connection of Figure 2 of the present application, as applied to a UMTS network. In a UMTS network, the packet switched data connections associated with a certain terminal or

application may be linked together by means of an identifier called a packet switched data protocol context.

According to page 11, lines 5-17 of the present specification, a layer 3 compatibility entity (L3CE) 407 (similar to a packet data convergence protocol) recognizes data transfer requirements of the packet switched data protocol contexts present at network service access points 403-406. The L3CE 407 couples them to appropriate service access points 412-415 where data is transferred to radio access bearer services.

Logical link entities 419-422 in the logical link control (LLC) layer 416 control the data transfer over individual radio access bearer services. In one embodiment of the invention explained in detail on page 12, line 25 through page 13, line 2, a network node 402 at the interface of the fixed network and radio access network analyzes what protocols are used in the packet switched data connections present at network service access points 403-406. This is conveyed to a logical link module 417 and then to logical link entities 419-422.

Each logical link entity 419-422 then adds a protocol identifier to its protocol frame which indicates the higher protocols used. The protocol identifier may be utilized both for selecting a radio access bearer service for a packet switched data connection and for managing radio access bearer services. The protocol identifier may be especially helpful for solving problems in the MAC layer such as repeated retransmissions caused by traffic congestion or transmission deadlocks. For example, selection of a retransmission mode, a size of a possible acknowledge window and adjustment of that size, packet management, and estimation of the quantity of data transferred

are functions where the identification of higher protocols is useful. As a further example, if it is known that an application requires real-time data transfer, the radio access bearer service will not carry out retransmissions and will try to send the packets in the correct order.

Figure 5 illustrates a hierarchical data structure 500 which may be used in the protocol system of figure 4. The protocol identifier may be placed either in a special field in the protocol frame or within the data itself. The protocol identifier shown in Figure 5 is two bytes long. The bytes are represented as horizontal rows and bits as vertical columns, the least significant bit being farthest to the right.

As described in the specification on page 13, line 20 through page 15, line 13, the first byte of the data structure 500 includes a protocol content identifier 502 for rough protocol identification, and a protocol content identity group 503 that defines the application protocol in use. The first byte provides for identification of internet protocol (IP) and application protocol (AP) types and versions. The second byte of the data structure 500 includes a content descriptor 504 made up of flags that may be specified for the protocol groups identified in the protocol content identity group 503.

A protocol identifier as described may be utilized when application software, for example, a multimedia application, uses several separate data connections. If the multimedia objects are presented using the Multimedia and Hypermedia information coding Expert Group (MHEG) format, for example, the protocol identifier may be used to identify that the connections belong to the same application and that they should be

controlled in a consistent manner, for example, at the radio access network interface. This would avoid delivering certain objects without others, for example, delivering multimedia objects through one connection but terminating the connection carrying the control commands because of a lack of resources.

Independent claim 1 describes the invention in terms of a method for transferring information over a data connection according to a protocol stack where certain first protocol layers and certain second protocol layers exist, comprising the steps of:

creating a protocol identifier;

determining a value for said protocol identifier in accordance with the first protocol layers in said protocol stack; and

signaling said protocol identifier to the second protocol layers in said protocol stack.

Independent claim 18 describes the invention in terms of a communications apparatus arranged to transfer information to another communications apparatus in accordance with a protocol stack comprising certain first protocol layers and certain second protocol layers, comprising:

means for creating a protocol identifier;

means for determining the value of said protocol identifier in accordance with the first protocol layers of said protocol stack; and

means for signaling said protocol identifier to the second protocol layers of said protocol stack in either said

communications apparatus itself or in said other communications apparatus.

Independent claim 19 describes the invention as a communications apparatus arranged to transfer information from another communications apparatus in accordance with a protocol stack comprising first and second protocol layers, comprising means for signaling to said second protocol layers a protocol identifier the value of which is determined in accordance with the first protocol layers of said protocol stack.

Independent claim 20 expresses the invention as a data communication system comprising:

a first communications apparatus and second communications apparatus;

means for transferring information between said first and second communications apparatuses in accordance with a protocol stack comprising certain first protocol layers and certain second protocol layers;

at least in the first communications apparatus means for creating a protocol identifier;

at least in the first communications apparatus means for determining the value of said protocol identifier in accordance with the first protocol layers of said protocol stack; and

at least in the first communications apparatus means for signaling said protocol identifier to the second protocol layers of said protocol stack.

VI. ISSUES

1. The first issue presented for review is the propriety of the Examiner's rejection of claims 1, 2, 6, 8-10, and 14-20 under 35 USC 102(b) as being anticipated by Stevens, W. R. *TCP/IP Illustrated, The Protocols* (Addison-Wesely 2001), "Stevens".

2. The second issue presented for review is the propriety of the Examiner's rejection of claims 1, 7, 11 and 12 under 35 USC 102(b) as being anticipated by Amri et al. (US 5,535,199, "Amri").

3. The third issue presented for review is the propriety of the Examiner's rejection of claims 20-24 under 35 USC 102(b) as being anticipated by Gleeson et al. (US 5,446,736, "Gleeson").

4. The fourth issue presented for review is the propriety of the Examiner's rejection of claims 3-5 under 35 USC 103(a) as being are unpatentable over Stevens.

VII. GROUPING OF CLAIMS

The claims do not stand or fall together.

The claims are grouped as follows:

Group I:	Claims 1-17
Group II:	Claim 18
Group III:	Claim 19
Group IV:	Claims 20-24

In accordance with 37 C.F.R. 1.192(c)(7), an explanation of why the claims of the groups are believed to be separately patentable is contained in the argument section below.

VIII. ARGUMENT

ISSUE 1: Claims 1, 2, 6, 8-10, and 14-20 are not anticipated by Stevens under 35 U.S.C. §102(b).

It is well settled that a claim is anticipated, "only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." (See CHISOLM, Federal Circuit Guide, Pg. 1221).

> ...it must be shown that the reference contains all of the elements of the claims apart from irrelevant or merely extraneous variations, and the elements are arranged in the same way to achieve the same result which is asserted to be an inventive function... 454 U.S. 1129 (1981)

The elements of the claim and their function and purpose within the claim must be reviewed in a manner similar to an infringement analysis. If the device described in the cited reference would not infringe if it was later, it will not anticipate if the reference is earlier.

Group I, Claims 1-17

Of this group, claims 1, 2, 6, 8-10, and 14-17 are at issue under this rejection.

Claim 1 is directed to a method for transferring information over a data connection. Applying the above mentioned standard for anticipation to the protocol described in the Stevens reference, it is clear that Stevens fails to disclose or suggest signaling a protocol identifier determined in accordance with first protocol layers to second protocol layers.

Stevens pertains to landline router networks, while the present invention concerns making a connection over radio access networks. The fundamental difference between the two comes from the fact that in a fixed network one uses cables or optical fibers for building the connections, and it is always possible to utilize a thick enough cable or bunch of fibers so that any given estimated need for transmission capacity can be met and exceeded. Fixed router networks typically work on the principles of heavy over-dimensioning and strong self-adaptation, which is possible because the actual physical transmission path does not constitute a bottleneck of capacity.

On the other hand, in a radio access network the amount of available transmission capacity over the radio interface is always a limiting factor. There are only certain limited amounts of time and bandwidth available. It is very important that the packets that will be transmitted over the radio interface fulfill their Quality of Service requirements (i.e. the bearer parameters) at maximum efficiency, without wasting any portion of the scarce radio resources. For this purpose, the radio access networks involve factors like radio bearer configuration, radio resources administration, and scheduling algorithms, the correct parametrization and optimisation of which have a key role in enabling as much information as possible to be transmitted over the limited radio resources.

None of these types of factors appear in fixed landline router networks. The present invention is a part of such optimization, because stating the use of certain protocol layers reveals important details about how certain packets should be handled in the process.

Another point to be considered concerns the predictability of the protocol environment in a fixed landline router network vs. the unpredictability of the radio access networks. A terminal that will connect to a fixed network has a network adapter (typically a network connection board) that is fixedly configured to utilize certain protocols in communicating with the network. This is the case in the cited reference publication. There is no disclosure in the cited reference about signaling a protocol identifier because there is no need for separately signaling anything about protocols, the reason being that the terminal will stay fixed at its location, and its operating environment does not change.

On the other hand, in the present invention, where radio access networks are involved, the terminal is moving and can connect to one radio access network at the moment but may connect with another radio access network in the near future, which may involve a different use of the protocols as a default. It is therefore important that the terminal is capable of taking part in signaling about the protocols as claimed in the present invention. This enables the terminal to automatically adapt itself into any new operating environments, which it will be required to do every now and then.

It is important to note that, as mentioned above, information handled on one protocol layer is generally not available to

other layers, because between the layers, operations like bit interleaving and segmentation or "chopping up" of packets may take place.

Therefore, even if a cited reference, for example, Stevens, mentions that an IP protocol layer in one device may insert a certain identifier into a TYPE field of a packet header, that information (the value of the identifier) is not available to any entity other than exactly the same protocol layer in a peer device, which is capable of reading the packet header. Therefore the simple existence of such an identifier does not anticipate the invention as claimed, because in the independent claims information about a certain protocol layer is signaled to another protocol layer as well.

Even if the IP layer of a transmitting device knows what value to use for the identifier, this does not suggest that it must somehow have obtained information about what protocol layer is used above it in the same device. While the concept of protocol primitives is known because they constitute the mechanism by which the IP layer knows the correct value for the identifier to be put into the TYPE field, protocol primitives do not signal as recited in the presently pending claims.

At least for these reasons, Appellants respectfully submit that Stevens fails to anticipate claims 1, 2, 6, 8-10, and 14-17.

Group II, Claim 18

Claim 18 is directed to a communications apparatus arranged to transfer information to another communications apparatus in accordance with a protocol stack comprising certain first and second protocol layers.

Stevens fails to disclose or suggest a means for signaling a protocol identifier to the second protocol layers of the protocol stack in either the communications apparatus or the other communications apparatus.

The purpose of the present invention is to enable the signaling of a certain protocol in use, even to a different protocol layer in a different device. The devices taking part in such signaling are not necessarily the ultimate starting and ending points of a connection, but the radio access network is involved in such signaling. Network nodes that may utilize this type of inventive signaling include, using the terminology of present-day networks, GGSN (Gateway GPRS Supporting Node), RNC (Radio Network Controller), call control servers, SIP (Session Initiation Protocol) servers, and edge routers.

As mentioned above, information handled on one protocol layer is generally not available to other layers, because between the layers, operations like bit interleaving and segmentation or "chopping up" of packets may take place.

Also as mentioned above, while the concept of protocol primitives is known because they provide information to the IP layer for inserting the correct value of the identifier in the TYPE field, protocol primitives do not signal between protocol layers of the protocol stack in either a communications apparatus or another communications apparatus, as recited in claim 18.

Group III, Claim 19

Claim 19 is directed to a communications apparatus arranged to transfer information from another communications apparatus in

accordance with a protocol stack comprising certain first and second protocol layers. This is in contrast to claim 18 which is directed to transferring information to another communications apparatus.

Stevens fails to disclose or suggest a means for signaling a protocol identifier to the second protocol layers, the value of which has been determined in accordance with the first layers. Furthermore, there is no disclosure in Stevens related to transferring this type of information from another communications apparatus

Group IV, Claims 20-24

Of this Group, claim 20 is at issue under this rejection.

Claim 20 is directed to a data communication system, including a first and second communications apparatus, and means for transferring information between the first and second communications apparatuses in accordance with a protocol stack comprising certain first protocol layers and certain second protocol layers.

Stevens fails to disclose or suggest at least in the first communications apparatus, a means for signaling a protocol identifier to the second protocol layers of said protocol stack. There is no disclosure in Stevens related to signaling between protocol layers of the protocol stack

ISSUE 2: Claims 1, 7, 11 and 12 are not anticipated by Amri under 35 U.S.C. §102(b).

This issue involves claims from Group I.

Like Stevens, there is no disclosure in Amri related to signaling a protocol identifier determined in accordance with first protocol layers to second protocol layers.

Amri appears to operate in a commonly accepted definition of the TCP/IP environment. Column 7, line 27, to column 8, line 5 of Amri, which includes the passages cited by the Examiner, discloses a known way of conveying information about known protocols in use: setting a certain value into a PID (Protocol IDentifier) field that is defined to occupy the first few bytes of the User Data field in a Call Request packet.

This is a classical example where signaling information is packed into the same package with the actual payload information to be transmitted, which in the case of a Call Request packet is the indication of a party's desire to set up a call.

Amri also describes the process of how a packet of one protocol level may be converted and "chopped into pieces" on the next immediately lower protocol level, at column 7, lines 13-15.

However, Amri simply does not disclose or suggest signaling a protocol identifier between protocol layers. At least for these reasons, Appellants respectfully submit that Amri does not anticipate claims 1, 7, 11 and 12.

ISSUE 3: Claims 20-24 are not anticipated by Gleeson under 35 U.S.C. §102(b).

This issue involves the claims of Group IV.

Gleeson has no disclosure related to signaling a protocol identifier determined in accordance with first protocol layers to second protocol layers, as recited in Appellants' claim 20.

As Gleeson's Title indicates ("…Using a Standard Protocol"), Gleeson is not directed to signaling between protocol layers, because signaling between protocols is not a standard technique.

The Final Office Action refers column 14, lines 34-38 of Gleeson which describes using a Compression ID in a certain field of a packet. This is similar to using a PID as suggested by Amri above. However, this does not suggest signaling a protocol identifier between protocol layers. At least for this reason, Appellants submit that Gleeson fails to anticipate claims 20-24.

ISSUE 3: Claims 3-5 are patentable over Stevens under 35 U.S.C. §103(a).

This issue involves claims 3-5 of Group I.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. (MPEP 2143)

Appellants respectfully submit that a *prima facie* case of obviousness has not been established at least because Stevens fails teach or suggest all the claim limitations of claim 1 from which claims 3-5 depend. Stevens fails to disclose or suggest signaling a protocol identifier determined in accordance with first protocol layers to second protocol layers.

Appellants respectfully submit that claims 3-5 are patentable over Stevens.

CONCLUSION

In conclusion, Appellants respectfully submit that claims 1, 2, 6, 8-10, and 14-20 are not anticipated by Stevens.

Appellants also submit that claims 1, 7, 11 and 12 are not anticipated by Amri.

Appellants further submit that claims 20-24 are not anticipated by Gleeson.

Appellants still further submit that claims 3-5 are patentable over Stevens.

It is respectfully submitted that all of the claims, as presented, are clearly novel and patentable over the prior art of record. Accordingly, the Board of Appeals is respectfully requested to favorably consider the rejected claims and to reverse the final rejection, thereby enabling this application to issue as a U.S. Letters Patent.

The appendix of claims is attached hereto.

A check in the amount of $440 is enclosed herewith for the appeal brief fee and for a 1 month extension. The Commissioner is hereby authorized to charge payment for any additional fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,

Joseph V. Gamberdell, Jr. 12/30/03

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IX. APPENDIX OF CLAIMS

The text of the claims involved in the appeal is as follows:

1. A method for transferring information over a data connection according to a protocol stack where certain first protocol layers and certain second protocol layers exist, comprising the steps of

creating a protocol identifier,

determining a value for said protocol identifier in accordance with the first protocol layers in said protocol stack and

signaling said protocol identifier to the second protocol layers in said protocol stack.

2. The method of claim 1, comprising the steps of

establishing a data connection between a first communications apparatus and second communications apparatus,

determining a value for said protocol identifier in said first communications apparatus and

delivering said protocol identifier from the first communications apparatus to the second communications apparatus.

3. The method of claim 1, comprising the steps of

establishing a data connection between a first communications apparatus and a second communications apparatus via a third communications apparatus,

determining a value for said protocol identifier in said first communications apparatus and

delivering said protocol identifier from the first communications apparatus to the third communications apparatus.

4. The method of claim 1, comprising the steps of

establishing a data connection between a first communications apparatus and a second communications apparatus via a third communications apparatus,

determining a value for said protocol identifier in said third communications apparatus and

delivering said protocol identifier from the third communications apparatus to the first communications apparatus.

5. The method of claim 1, comprising the steps of

establishing a data connection between a first communications apparatus and a second communications apparatus via a third communications apparatus and a fourth communications apparatus,

determining a value for said protocol identifier in said third communications apparatus and

delivering said protocol identifier from the third communications apparatus to the fourth communications apparatus.

6. The method of claim 1, comprising the step of delivering said protocol identifier over said data connection.

7. The method of claim 1, comprising the step of delivering said protocol identifier over a control connection which is different than said data connection.

8. The method of claim 1, comprising the step of delivering said protocol identifier in conjunction with the opening of said data connection.

9. The method of claim 1, comprising the step of delivering said protocol identifier at a certain stage after the opening of said data connection.

10. The method of claim 1, comprising the step of repeatedly delivering said protocol identifier at certain intervals.

11. The method of claim 1, comprising the steps of

determining and delivering said protocol identifier more than once during said data connection,

determining said protocol identifier at each time on the basis of a certain part of the first protocol layers, and

choosing said part of the first protocol layers such that the chosen part is not identical at all instances of determination.

12. The method of claim 1, comprising the steps of

adapting said protocol identifier so as to comprise elements and

determining each element of said protocol identifier on the basis of a certain part of the first protocol layers.

13. The method of claim 12, comprising the steps of

adapting said protocol identifier so as to comprise a first element and a second element, and

determining said second element so that it defines in more detail a certain part of the first protocol layers generally defined by said first element.

14. The method of claim 1, comprising the step of placing said protocol identifier into a protocol frame of a certain protocol layer together with certain data to be transferred.

15. The method of claim 14, comprising the step of placing said protocol identifier into a field within a protocol frame which field is reserved for the protocol identifier.

16. The method of claim 15, comprising the step of placing said protocol identifier into a field within a protocol frame of a certain logical link control protocol.

17. The method of claim 1, comprising the step of determining a value for said protocol identifier in accordance with the contents of the data transferred over said data connection.

18. A communications apparatus arranged to transfer information to another communications apparatus in accordance with a protocol stack comprising certain first protocol layers and certain second protocol layers, comprising

means for creating a protocol identifier,

means for determining the value of said protocol identifier in accordance with the first protocol layers of said protocol stack, and

means for signaling said protocol identifier to the second protocol layers of said protocol stack in either said communications apparatus itself or in said other communications apparatus.

19. A communications apparatus arranged to transfer information from another communications apparatus in accordance with a protocol stack comprising first and second protocol layers, comprising

means for signaling to said second protocol layers a protocol identifier the value of which is determined in accordance with the first protocol layers of said protocol stack.

20. A data communication system comprising

a first communications apparatus and second communications apparatus

means for transferring information between said first and second communications apparatuses in accordance with a protocol stack comprising certain first protocol layers and certain second protocol layers,

at least in the first communications apparatus means for creating a protocol identifier,

at least in the first communications apparatus means for determining the value of said protocol identifier in accordance with the first protocol layers of said protocol stack, and

at least in the first communications apparatus means for signaling said protocol identifier to the second protocol layers of said protocol stack.

21. The data communication system of claim 20, wherein

the first communications apparatus is a wireless terminal in a radio access network,

said means for transferring information is arranged to deliver said protocol identifier to the second communications apparatus, and

the second communications apparatus is a network element in said radio access network.

22. The data communication system of claim 21, wherein said means for transferring information is arranged to deliver said protocol identifier across a radio interface of a mobile network in a call control connection.

23. The data communication system of claim 20, wherein

the first communications apparatus is a network element in a radio access network,

said means for transferring information is arranged to deliver said protocol identifier to the second communications apparatus, and

the second communications apparatus is a wireless terminal in said radio access network.

24. The data communication system of claim 23, wherein said means for transferring information is arranged to deliver said protocol identifier across a radio interface of a mobile network in a call control connection.